SECTION 2

INTRODUCTION

2.0 GENERAL

Single-Cardiotach

The Model 115 Fetal Monitor (Single-Cardiotach) is designed to monitor one fetal heart rate and maternal uterine contractions using either internal or external clinical methods. Simultaneous trends of beat-to-beat heart rate (HR) and uterine activity (UA) are continuously plotted on the dual-channel strip-chart recorder and displayed on the front-panel numeric displays.

Dual-Cardiotach

The Model 115 Fetal Monitor (Dual-Cardiotach) can simultaneously monitor up to two heart rates (twins or maternal/fetal) and maternal uterine contractions using either internal or external clinical methods. Simultaneous trends of beat-to-beat heart rate (HR) and uterine activity (UA) are continuously plotted on the dual-channel strip-chart recorder and displayed on the front-panel numeric displays.

2.1 EXTERNAL MONITORING MODES

The four external monitoring modes are described below:

Continuous-Wave Doppler Ultrasound

A transducer placed on the maternal abdomen directs an ultrasonic beam toward the fetal heart and senses Doppler-shifted echoes created by moving cardiac structures. Autocorrelation processing is used to determine the timing of successive cardiac cycles.

Phono

An acoustically sensitive transducer placed on the maternal abdomen senses fetal heart sounds which are used to compute the fetal heart rate (FHR). Autocorrelation processing is used in this mode to improve measurement accuracy.

Tocodynamometer

A tocotransducer, strapped to the maternal abdomen in the area of the uterine fundus, measures the relative pressure within the uterus in a relative scale from 0 to 100.

Maternal ECG (MECG) — Dual-Cardiotach Only

ECG waveforms are obtained via electrodes attached to the maternal abdomen. Maternal heart rate (MHR) is computed on a beat-to-beat basis using the time interval between R-wave peaks.

2.2 INTERNAL MONITORING MODES

The two internal monitoring modes are discussed below:

Direct Fetal ECG (FECG)

ECG waveforms are obtained via a spiral electrode attached to the fetal presenting part. FHR is computed on a beat-to-beat basis using the time interval between R-wave peaks.

Intrauterine Catheter and Strain Gauge

Amniotic fluid pressure is measured using a transcervical intrauterine catheter and an externally mounted strain gauge. Pressure trends are measured over the range of 0 to 100 mmHg.